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EXAMINER	
DWIVEDI, MAHESH H	

ART UNIT	PAPER NUMBER
2168	

DATE MAILED: 09/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/679,498	NEIDECKER-LUTZ, BURKHARD K.	
	Examiner	Art Unit	
	Mahesh H. Dwivedi	2168	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 June 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statements (IDS) submitted on 05/17/2004, 02/14/2005, and 09/01/2005 have been received, entered into the record, and considered. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements are being considered by the examiner.

Response to Amendment

2. Receipt of Applicant's Amendment, filed on 06/16/2006, is acknowledged. The amendment includes the cancellation of claims 15-20, and amending claims 1, 3, and 9-14.

Claim Objections

3. The objections raised in the office action mailed on 04/07/2006 have been overcome by the applicant's amendments received on 06/16/2006.

Specification

4. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: In claim 10, the term **"formatted"** is not adequately described in the specification.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Carey et al.** (Article entitled "On Saying "Enough Already!" in SQL" Proceedings of the 1997 ACM SIGMOD International Conference on Management of Data, Tucson, Arizona, United States, Vol. 26, No. 2, June 1997, pp. 219-230, XP00730509) and in view of **Agarwal et al.** (U.S. Patent 6,795,817).

7. Regarding claim 1, **Carey** teaches a data store query system comprising:

A) a data store that includes a collection of records; (Carey, Pages 219-220);

B) a sorted result buffer (Carey, Pages 219-220); and

C) a query interface operable to receive a limit and order query that includes both of an order criteria and a limit criteria (Carey, Pages 219-220);

D) the limit criteria specifying a maximum number N of records for a result set of records satisfying the limit and order query (Carey, Pages 219-220); and

E) and to output the sorted result buffer as the result set of records (Carey, Pages 219-220)

The examiner notes that **Carey** teaches **"a data store that includes a collection of records"** as "an object-relational travel database" (Page 220, Section: Example SELECT Queries). The examiner further notes that it is common knowledge that SQL operations use buffers for sorting purposes. The examiner further notes that **Carey** teaches **"a query interface operable to receive a limit and order query that includes both of an order criteria and a limit criteria"** as "the specification of a cardinality limit for a query can be supported by extending the syntax of SQL's SELECT statement" (Page 219, Section: Extending SQL). The examiner further notes that **Carey** teaches **"the limit criteria specifying a maximum number N of records for a result set of records satisfying the limit and order query"** as "The semantics of a STOP AFTER query are straightforward to explain operationally: after doing everything else specified by the query, retain only the first N result tuples" (Page 220, Section: Extending SQL). The examiner further notes that **Carey** teaches **"and to output the sorted result buffer as the result set of records"** as "We can then find the five hotels closest to the O'Hare airport" (Page 220, Section: Example SELECT Queries).

Carey does not explicitly tech:

F) to fill the sorted result buffer with a first N number of records from the data store;

G) to iteratively order the sorted result buffer based upon the order criteria;

H) iteratively compare remaining records in the data store against a Nth record in the sorted result buffer based upon the order criteria;

l) to iteratively replace the Nth record in the sorted result buffer with a remaining record in the data store based upon iteratively comparing remaining records in the data store against the Nth record in the sorted result buffer;

Agarwal, however, teaches **"to fill the sorted result buffer with a first N number of records from the data store"** as "Column 308 shows the already retrieved rows that remain after the first set of results are returned to the user" (Column 6, lines 49-50, Figure 3), **"to iteratively order the sorted result buffer based upon the order criteria"** as "The newly retrieved rows are merged with the previously retrieved rows that have not yet been returned as query results, and the entire set of rows is sorted as a group, as shown in column 312 of FIG. 3" (Column 7, lines 31-34), **"iteratively compare remaining records in the data store against a Nth record in the sorted result buffer based upon the order criteria"** as "The newly retrieved rows are merged with the previously retrieved rows that have not yet been returned as query results, and the entire set of rows is sorted as a group, as shown in column 312 of FIG. 3" (Column 7, lines 31-34), and **"to iteratively replace the Nth record in the sorted result buffer with a remaining record in the data store based upon iteratively comparing remaining records in the data store against the Nth record in the sorted result buffer"** as "The newly retrieved rows are merged with the previously retrieved rows that have not yet been returned as query results, and the entire set of rows is sorted as a group, as shown in column 312 of FIG. 3" (Column 7, lines 31-34).

The examiner further notes that in the specified example of **Agarwal**, there is a request for 4 rows of data. Reference numeral 308 in Figure 3 clearly shows an intermediate buffer with four records. The examiner further notes that in reference numeral 310 in Figure 3, B60 clearly replaces A01 as the 2nd highest result.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because teaching **Agarwal's** would have allowed **Carey's** to provide a method reduce the amount of time accessing a records database via queries, as noted by **Agarwal** (Column 1, lines 33-47).

Regarding claim 2, **Carey** further teaches a data store query system comprising:

A) wherein the data store is a database or a fast cache (Pages 219-220).

The examiner notes that Carey teaches **"wherein the data store is a database or a fast cache"** as "an object-relational travel database" (Page 220, Section: Example SELECT Queries).

Regarding claim 3, **Carey** further teaches a data store query system comprising:

A) wherein the collection of records further comprises a table having an attribute (Pages 220, 222); and

B) the query interface is operable to receive the limit and order query placing order constraints on the attribute (Pages 219-220).

The examiner notes that **Carey** teaches **"wherein the collection of records further comprises a table having an attribute"** as "consider the following database for managing a company's employees, departments, and employees' travel expense accounts (TEA's)" (Page 222 Section: Conservative Plan Examples), and **"wherein the query interface is operable to receive the limit and order query placing order constraints on the attribute"** as "order by distance (h.location, a.location)" (Page 220, Section: Example SELECT Queries).

Regarding claim 4, **Carey** further teaches a data store query system comprising:

A) wherein the query interface creates a revised sorted result buffer in response to a modification of the limit and order query, the modification being made during a pause in execution of the limit and order query (Pages 219-221).

The examiner notes that **Carey** teaches **"wherein the query interface creates a revised sorted result buffer in response to a modification of the limit and order query, the modification being made during a pause in execution of the limit and order query"** as "Scan-Stop is a pipelined operator" (Page 221).

The examiner notes that it is common knowledge that the **"order by"** command in an SQL script sorts iteratively and modifies the terms of the query

string with respect to the conditions of the initial query. The examiner further notes that it is common knowledge that pipelining produces results that are iteratively returned as they are produced instead of in a batch.

Regarding claim 5, **Carey** further teaches a data store query system comprising:

A) wherein the sorted result buffer is stored in random access memory (Pages 219-220).

Regarding claim 6, **Carey** further teaches a data store query system comprising:

A) wherein the query interface is operable to receive the limit and order query formulated using standard query language (SQL) (Pages 219-220).

The examiner notes that Carey teaches **"wherein the query interface is operable to receive the limit and order query formulated using standard query language (SQL)"** as "In this paper, we extend SQL with explicit support for limiting the cardinality of a query result to a user-specified number of tuples" (Page 219, Section: Introduction).

Regarding claim 7, **Carey** further teaches a data store query system comprising:

A) wherein the query interface is operable to receive the limit and order query that requests the first or last N records satisfying the query (Pages 219-221).

The examiner notes that **Carey** teaches **"wherein the query interface is operable to receive the limit and order query that requests the first or last N records satisfying the query"** as "the stop operator is a new logical query operator; it produces, in order, the top or bottom N tuples of its input stream" (Page 221, Section 3.1: The Stop Operator).

Regarding claim 8, **Carey** further teaches a data store query system comprising:

A) wherein the query interface is operable to identify data in the data store that satisfies the limit and order query using the sorted result buffer by iteratively reformulating the limit and order query until the sorted result buffer contains data satisfying the limit and order query (Pages 219-221).

The examiner notes that Carey teaches **"wherein the query interface is operable to identify data in the data store that satisfies the limit and order query using the sorted result buffer by iteratively reformulating the limit and order query until the sorted result buffer contains data satisfying the limit and order query"** as "Scan-Stop is a pipelined operator" (Page 221).

The examiner notes that it is common knowledge that the **"order by"** command in an SQL script sorts iteratively and modifies the terms of the query string with respect to the conditions of the initial query. The examiner further notes that it is common knowledge that pipelining produces results that are iteratively returned as they are produced instead of in a batch.

Regarding claim 9, **Carey** teaches a method comprising:

A) receiving a limit and order query that includes both of an order criteria and a limit criteria; (Carey, Pages 219-220);

B) the limit criteria specifying a maximum number N of records for a result set of records satisfying the limit and order query (Carey, Pages 219-221).

C) outputting the sorted result buffer as the result set of records (Pages 219-220).

The examiner notes that **Carey** teaches **"receiving a limit and order query that includes both of an order criteria and a limit criteria"** as "Example 1: spatial Data...Stop After 5" (Page 220, Section: Example SELECT Queries). The examiner further notes that **Carey** teaches **"the limit criteria specifying a maximum number N of records for a result set of records satisfying the limit and order query"** as "The semantics of a STOP AFTER query are straightforward to explain operationally: after doing everything else specified by the query, retain only the first N result tuples" (Page 220, Section: Extending SQL). The examiner further notes that **Carey** teaches **"outputting the sorted result buffer as the result set of records"** as "We can then find the five hotels closest to the O'Hare airport" (Page 220, Section: Example SELECT Queries).

Carey does not explicitly tech:

D) filling a sorted result buffer with a first N number of records from a data store;

E) iteratively ordering the sorted result buffer based upon the order criteria;

F) iteratively comparing remaining records in the data store against a NTH record in the sorted result buffer based upon the order criteria;

G) to iteratively replace the Nth record in the sorted result buffer with a remaining record in the data store based upon iteratively comparing remaining records in the data store against the Nth record in the sorted result buffer;

Agarwal, however, teaches **"filling a sorted result buffer with a first N number of records from a data store"** as "Column 308 shows the already retrieved rows that remain after the first set of results are returned to the user" (Column 6, lines 49-50, Figure 3), **"iteratively ordering the sorted result buffer based upon the order criteria"** as "The newly retrieved rows are merged with the previously retrieved rows that have not yet been returned as query results, and the entire set of rows is sorted as a group, as shown in column 312 of FIG. 3" (Column 7, lines 31-34), **"iteratively comparing remaining records in the data store against a NTH record in the sorted result buffer based upon the order criteria"** as "The newly retrieved rows are merged with the previously retrieved rows that have not yet been returned as query results, and the entire set of rows is sorted as a group, as shown in column 312 of FIG. 3" (Column 7, lines 31-34), and **"iteratively replacing the Nth record in the sorted result buffer with a remaining record in the data store based upon iteratively comparing remaining records in the data store against the Nth record in the sorted result buffer"** as "The newly retrieved rows are merged with the previously retrieved rows that have not yet been returned as query results, and the entire set of rows is sorted as a group, as shown in column 312 of FIG. 3" (Column 7, lines 31-34).

The examiner further notes that in the specified example of **Agarwal**, there is a request for 4 rows of data. Reference numeral 308 in Figure 3 clearly shows an intermediate buffer with four records. The examiner further notes that in reference numeral 310 in Figure 3, B60 clearly replaces A01 as the 2nd highest result.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because teaching **Agarwal's** would have allowed **Carey's** to provide a method reduce the amount of time accessing a records database via queries, as noted by **Agarwal** (Column 1, lines 33-47).

Regarding claim 10, **Carey** further teaches a method comprising:

A) wherein the limit and order query is formatted using standard query language (SQL) (Pages 219-220).

The examiner notes that Carey teaches **"wherein the limit and order query is formatted using standard query language (SQL)"** as "In this paper, we extend SQL with explicit support for limiting the cardinality of a query result to a user-specified number of tuples" (Page 219, Section: Introduction).

Regarding claim 11, **Carey** further teaches a method comprising:

A) wherein filling the sorted result buffer with the first N number of records comprises scanning the data store without consideration of the order criteria to

identify records otherwise satisfying the limit and order query (Pages 219-221); and

B) placing identified records into the sorted result buffer until the sorted result buffer includes the maximum number of records specified by the limit criteria (Pages 219-221).

The examiner notes that "scan stop is a pipelined operator" (Page 221) is analogous to an iterative process for acquiring specified query records recursively.

Regarding claim 12, **Carey** further teaches a method comprising:

A) wherein the limit and order query requests the first N records satisfying the order criteria (Carey, Pages 219-221).

The examiner notes that **Carey** teaches **"wherein the limit and order query requests the first N records satisfying the order criteria"** as "the stop operator is a new logical query operator; it produces, in order, the top or bottom N tuples of its input stream" (Page 221, Section 3.1: The Stop Operator).

Regarding claim 13, **Carey** further teaches a method comprising:

A) wherein the limit and order query requests the last N records satisfying the order criteria (Carey, Pages 219-221).

The examiner notes that **Carey** teaches **"wherein the limit and order query requests the last N records satisfying the order criteria"** as "the stop

operator is a new logical query operator; it produces, in order, the top or bottom N tuples of its input stream" (Page 221, Section 3.1: The Stop Operator).

Regarding claim 14, **Carey** teaches an apparatus comprising:

A) a first code segment for receiving a limit and order query that includes both of an order criteria and a limit criteria; (Carey, Pages 219-220);

B) the limit criteria specifying a maximum number N of records for a result set of records satisfying the limit and order query (Carey, Pages 219-221).

C) a sixth code segment for outputting the sorted result buffer as the result set of records (Pages 219-220).

The examiner notes that **Carey** teaches **"a first code segment for receiving a limit and order query that includes both of an order criteria and a limit criteria"** as "Example 1: spatial Data...Stop After 5" (Page 220, Section: Example SELECT Queries). The examiner further notes that **Carey** teaches **"the limit criteria specifying a maximum number N of records for a result set of records satisfying the limit and order query"** as "The semantics of a STOP AFTER query are straightforward to explain operationally: after doing everything else specified by the query, retain only the first N result tuples" (Page 220, Section: Extending SQL). The examiner further notes that **Carey** teaches **"a sixth code segment for outputting the sorted result buffer as the result set of records"** as "We can then find the five hotels closest to the O'Hare airport" (Page 220, Section: Example SELECT Queries).

Carey does not explicitly tech:

D) a second code segment for filling a sorted result buffer with a first N number of the set of data records from a data store;

E) a third code segment for iteratively ordering the sorted result buffer based upon the order criteria;

F) a fourth code segment for iteratively comparing remaining records in the data store against a Nth record in the sorted result buffer based upon the order criteria;

G) a fifth code segment for iteratively replacing the Nth record in the sorted result buffer with a remaining record in the data store based upon iteratively comparing remaining records in the data store against the Nth record in the sorted result buffer;

Agarwal, however, teaches **"a second code segment for filling a sorted result buffer with a first N number of the set of data records from a data store"** as "Column 308 shows the already retrieved rows that remain after the first set of results are returned to the user" (Column 6, lines 49-50, Figure 3), **"a third code segment for iteratively ordering the sorted result buffer based upon the order criteria"** as "The newly retrieved rows are merged with the previously retrieved rows that have not yet been returned as query results, and the entire set of rows is sorted as a group, as shown in column 312 of FIG. 3" (Column 7, lines 31-34), **"a fourth code segment for iteratively comparing remaining records in the data store against a Nth record in the sorted result buffer based upon the order criteria"** as "The newly retrieved rows are merged with the previously retrieved rows that have not yet been returned as query

results, and the entire set of rows is sorted as a group, as shown in column 312 of FIG. 3" (Column 7, lines 31-34), and **"a fifth code segment for iteratively replacing the Nth record in the sorted result buffer with a remaining record in the data store based upon iteratively comparing remaining records in the data store against the Nth record in the sorted result buffer"** as "The newly retrieved rows are merged with the previously retrieved rows that have not yet been returned as query results, and the entire set of rows is sorted as a group, as shown in column 312 of FIG. 3" (Column 7, lines 31-34).

The examiner further notes that in the specified example of **Agarwal**, there is a request for 4 rows of data. Reference numeral 308 in Figure 3 clearly shows an intermediate buffer with four records. The examiner further notes that in reference numeral 310 in Figure 3, B60 clearly replaces A01 as the 2nd highest result.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because teaching **Agarwal's** would have allowed **Carey's** to provide a method reduce the amount of time accessing a records database via queries, as noted by **Agarwal** (Column 1, lines 33-47).

Response to Arguments

8. Applicant's arguments with respect to claims 1-14 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The examiner notes that in page 1 of section 12 in **Gietz**, pipelining is described as "pipelining produces results that are iteratively returned as they are produced instead of in a batch".

Article entitled "Oracle9i: Data Cartridge Developer's Guide" by **Gietz et al.**, (June 2001). The subject matter disclosed therein is pertinent to that of claims 1-14 (Pipelining).

U.S. Patent 5,671,403 issued to **Shekita et al.** on 23 September 1997. The subject matter disclosed therein is pertinent to that of claims 1-14 (e.g., methods to iteratively attain query results).

Article entitled "Single Buffered Histogram Sort" by **McCoskey**, (04 February 1999). The subject matter disclosed therein is pertinent to that of claims 1-14 (Pipelining).

U.S. Patent 5,974408 issued to **Cohen et al.** on 26 October 1999. The subject matter disclosed therein is pertinent to that of claims 1-14 (e.g., methods to iteratively attain query results).

U.S. PGPUB 2003/0233340 issued to **Flasza et al.** on 18 December 2003. The subject matter disclosed therein is pertinent to that of claims 1-14 (e.g., methods to iteratively attain query results).

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**.

See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mahesh Dwivedi whose telephone number is (571) 272-2731. The examiner can normally be reached on Monday to Friday 8:20 am – 4:40 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Vo can be reached (571) 272-3642. The fax number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public

PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mahesh Dwivedi

Patent Examiner

Art Unit 2168

August 31, 2006

Leslie Wong

Primary Examiner